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ABSTRACT

This occupational classification for practical and theoretical use in vocational guidance, occupational research, vocational education, and social science rests upon a theory of personality types and includes 431 common occupations which comprise about 95 percent of the United States labor force. Each of the classification's six main classes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) includes five to sixteen subclasses. Within each subclass, occupations are arranged according to the number of years of general educational development required to perform them. The arrangement of main classes and subclasses is defined empirically and is consistent with the classification's theoretical base. The arrangement of classes also makes it possible to estimate the psychological relatedness among occupations. The construction of the classification, an evaluation of its usefulness, and some illustrations of its potential practical value are outlined. (Author/SB)

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CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

A PSYCHOLOGICAL CLASSIFICATION OF OCCUPATIONS

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NOVEMBER, 1970

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Abstract

An occupational classification for practical and theoretical use is presented. The classification rests upon a theory of personality types and includes 431 common occupations which comprise about 95% of the U. S. labor force. Each of the classification's six main classes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) includes five to sixteen subclasses such as Realistic-Investigative-Artistic, Realistic-Investigative-Social, etc. Within each subclass, occupations are arranged according to the number of years of general educational development required to perform them. The arrangement of main classes and subclasses is defined empirically and is consistent with the classification's theoretical base. The arrangement of classes also makes it possible to estimate the psychological relatedness among occupations. The construction of the classification, an evaluation of its usefulness, and some illustrations of its potential practical value for vocational guidance, occupational research, vocational education and social science are outlined.

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Introduction

This report presents an occupational classification for practical and theoretical use in vocational guidance, occupational research, vocational education, and social science. The classification is based on a theory of personality types and investigations resulting from it, and includes 431 occupations which encompass about 95% of the labor force. Each of the classification's six main classes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) includes five to sixteen subclasses such as Realistic-Investigative-Artistic, Realistic-Investigative-Social, etc. Within subclasses, occupations are arranged according to the number of years of general educational development required to perform them. The construction of the classification, the classification itself, an evaluation of its theoretical and empirical characteristics, and some practical applications are summarized in the following sections.

Construction of Classification

This section gives the history of the classification and its revisions from 1959 to 1970. Since the classification is based on a theory of personality types, some results which support both the theory and the classification are reported. In general, the goals of the following studies were usually to create a classification with ideal characteristics (comprehensiveness, independence of categories, classification by a single principle), or to test a classification for these and other characteristics. Unfortunately, the account of this work is somewhat tortuous because of its dependence upon fortuitous

samples, data, and insights, and because of the preoccupation with the testing of a theory of personality types. The importance of a useful classification occurred rather late in this research enterprise.

Preliminary Classifications

In 1959, Holland proposed an *a priori* occupational classification of six categories:

Realistic (technical, skilled, and laboring occupations)

Intellectual (scientific occupations)

Social (educational and social welfare occupations)

Conventional (office and clerical occupations)

Enterprising (sales and managerial occupations)

Artistic (artistic, literary, and musical occupations)

From 1959 to 1965 this classification was used in several theoretical studies, but it was neither directly tested for its value as a classification system nor explicitly defined for clear and easy use.

Later, Holland (1966a; 1966b) defined the major categories of the classification--Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic--in terms of the six Vocational Preference Inventory (VPI) scales having the same names. The VPI is a brief inventory of a person's interests consisting of 160 occupational titles (Holland, 1965). People take the inventory by indicating the occupations they "like" or "dislike." Each occupational title is assigned to a scale or category; for example "bank teller" is assigned to the

Conventional category. Thus the VPI scales consist of six groups of occupations, one group for each scale or occupational class.

The assumption that each occupational title in the VPI can be classified into one of the six categories in the classification made it possible to reconstruct the classification scheme in an explicit manner. The VPI was administered to students planning to enter different professions. The mean number of occupations rated "appealing" or "of interest" were calculated for each scale (Realistic, Intellecutal, etc.) for all students planning to enter a given occupation. VPI profiles were then formed for each occupation by placing the highest scale mean first, the next highest mean second, etc. The results defined an occupation's place in the classification. For example, the majority of students planning to be civil engineers obtained a profile of RIE, and thus "civil engineer" was placed in the major category Realistic, and in the subgroup Realistic-Intellectual-Enterprising. This procedure was applied to the VPI data for 12,432 college freshmen in 31 institutions (Abe, Holland, Lutz and Richards, 1965), producing separate occupational classifications for men and women.

Using these results, Holland (1966a) found that students (N=10,646) who chose occupations previously classified as "Realistic" had the Realistic scale of the VPI as their highest mean score. Also, their mean score on that scale was higher than the Realistic mean of any other occupational group. Students with Conventional choices had their highest mean score on the Conventional scale of the VPI, and so on.

In another study, Holland (1968b) demonstrated that individual VPI profiles could be interpreted according to his theory of personality types. For example, technical competencies and mechanical ability were associated with those students whose highest VPI scale was Realistic; high Intellectual scores were associated with scientific competencies, mathematical ability, etc. It was also possible to distinguish types of students by their second and even third highest VPI scales. To summarize, 64% to 84% of the predictions based on a student's high point scale or VPI profile pattern were according to theoretical expectations for large samples of men and women.

In a later study, Holland and Whitney (1968) applied the classification to longitudinal data and obtained unusually efficient predictions of vocational aspirations over an 8-to-12-month interval. For example, 79% of the men and 93% of the women reported successive vocational choices that were described as the same or related.

Richards (in Holland, 1968a) performed diagonal factor analyses to determine the degree to which each VPI scale is independent of what all the scales have in common. The results of separate analyses for large samples (3,771 men and 3,492 women) clearly demonstrated that each scale does measure something different from the others; or, there are at least six kinds of people. There may be more, but not fewer.

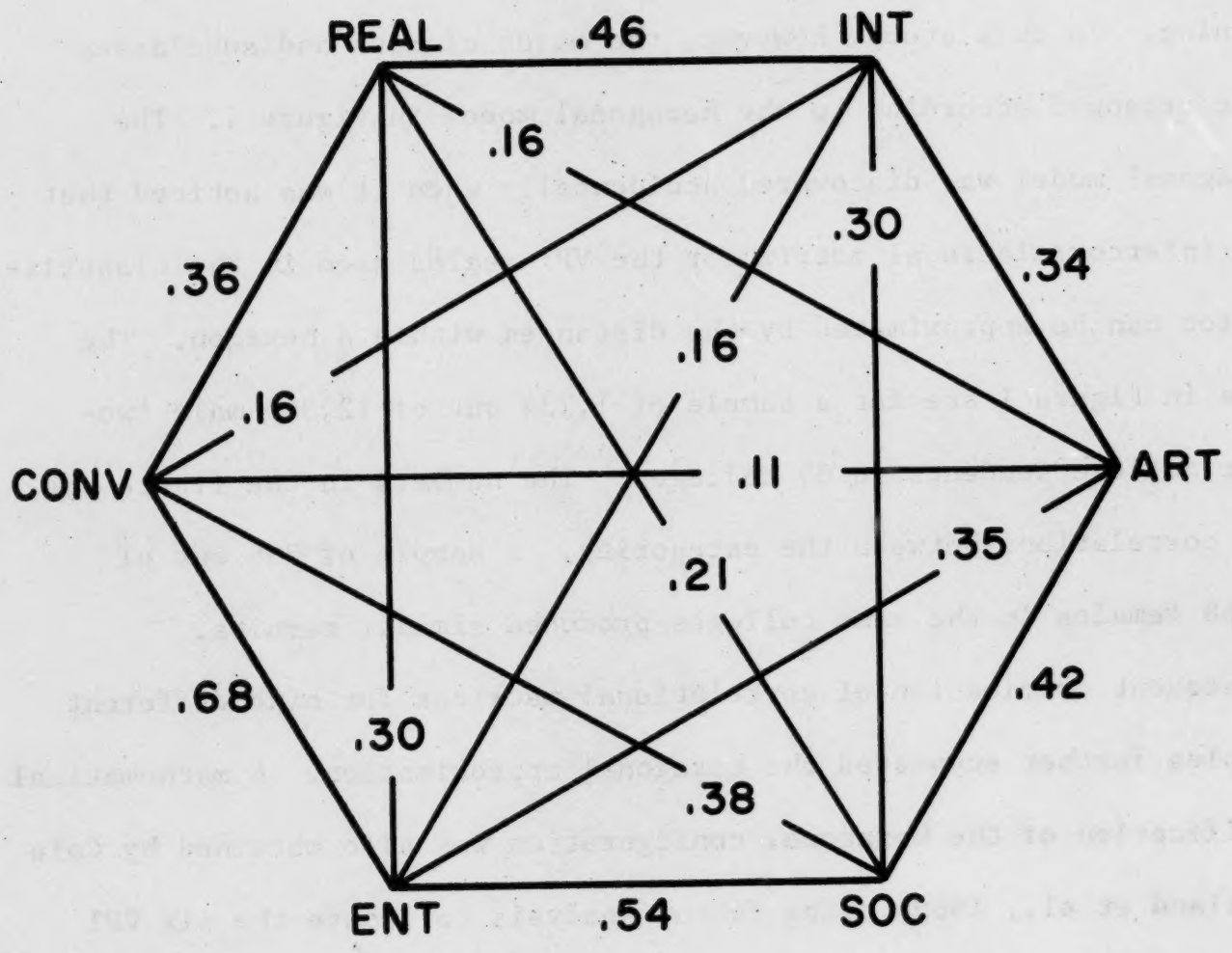
As a next step, Holland, Whitney, Cole and Richards (1969) added VPI data for a sample of two-year college students (12,345 men and 7,968 women in 65 colleges) to the data obtained in 1966 for four-year college students, along with some data for samples of

employed adults. These additions made the classification more comprehensive and reliable. Occupations were assigned to classes exactly as before; that is, mean VPI scores of all students aspiring to an occupation indicated that occupation's place in the classification.

In earlier classifications, the ordering of major classes and the arrangement of subgroups within major classes had no special meaning. In this study, however, the major classes and subclasses were arranged according to the hexagonal model in Figure 1. The hexagonal model was discovered accidentally when it was noticed that the intercorrelational matrix for the VPI scales used in the classification can be approximated by the distances within a hexagon. The data in Figure 1 are for a sample of 1,234 out of 12,345 male two-year college students in 65 colleges. The numbers in the figure are the correlations between the categories. A sample of 796 out of 7,968 females in the same colleges produced similar results. Subsequent examination of correlational matrices for nine different samples further supported the hexagonal approximation. A mathematical verification of the hexagonal configuration was also obtained by Cole (Holland et al., 1969) using factor analysis to locate the six VPI scales in a single plane. This geometric model arranges student occupational aspirations according to their psychological relatedness, thereby making the classification more useful for vocational guidance and research in careers. The hexagonal model arranges the main categories in the following order--Realistic, Intellectual, Artistic, Social, Enterprising, and Conventional (proceeding around the hexagon

Figure 1

A Hexagonal Model for Interpretating Inter- and Intra-Class Relationships



in a clockwise direction)--so that adjacent categories are most closely related. In general, close relationships are represented by short distances on the hexagon.

Using Figure 1 as a model, we can apply the same principle of arrangement to the subclasses within a major category by observing the following rule. Within a major category, arrange the subclasses so that the second and third code letters follow in clockwise order starting from the major category's first code. Thus the order within the Realistic category is RI, RA, RS, RE, RC, and the order within the Realistic-Intellectual subclass is RIA, RIS, RIE, etc. An application of these rules of arrangement is given on p. 23 of this article.

Development of Classification

The aims of the present revision were to extend the classification to all common occupations in the U. S. and to arrange each subclass of occupations in order of level of general educational development (GED). The assignment of GED levels to occupations was, with few exceptions, a clerical task. Using the Dictionary of Occupational Titles, occupations were assigned GED levels (1 through 6) according to their six digit occupational code.

Ideally, the way to increase the comprehensiveness of the classification would have been to have had large representative samples of employed adults take the Vocational Preference Inventory, calculate mean VPI profiles, and assign occupations to the classification according to profile patterns. Because this expensive data

collection was not possible, other alternatives were sought. Fortunately, other researchers' generosity provided most of the necessary data, and the extended classification--from 70 to 431 occupations--now encompasses 95% of the labor force.

The next sections describe how data from divergent sources were translated from other systems or scales into the six classes represented by the VPI.

Strong Vocational Interest Blank data. Recently, Campbell created six Vocational Preference Inventory scales for the Strong Vocational Interest Blank (SVIB). He accomplished this task by using the definitions of the personality types and lists of occupational titles given in Holland's (1966b) book. Campbell's VPI scales of 20 items provide an alternate form of the VPI. His scales, composed largely of occupational titles in the Strong, are similar to corresponding scales in the VPI. They contain many overlapping items, same or similar occupational titles, or related activity items. Campbell rescored some of the Strong criterion groups of employed adults with his alternate form of the VPI and produced VPI profiles for 200 samples of students and employed adults. (For a complete account, see Campbell and Holland, in press.)

The occupational profiles produced for employed adults from the Strong data agreed about 84% of the time with the VPI profiles of aspirants (largely college students) to the same occupations. More explicitly, for a sample of 76 occupations, the Campbell form of the VPI and the sixth revision of the VPI (Holland et al., 1969) agreed on

the main classification of an occupation (one of the six categories) about 84% of the time. The next two letters in an occupational profile were rarely identical, but the majority of the occupations in question received the same combination of three highest letters of VPI scales.

Parenthetically, the convergence of the VPI profiles obtained from the SVIB and the VPI profiles from other sources (Holland et al., 1969) is of marked value, because that convergence (84%) reveals that aspirants for particular occupations resemble the employed adults in the same occupations.

Purdue occupational data. The most sustained, scientific attempt to organize our knowledge of work activities is that of McCormick and his colleagues. Their contribution is not easily summarized because of its long time span, scope and complexity. The earliest work of the Purdue group has been summarized by McCormick, Cunningham and Gordon (1967) and by McCormick, Cunningham and Thornton (1967). Their more recent work has been summarized by McCormick, Jeanneret and Mecham (1969b) and by Jeanneret and McCormick (in press). The following paragraphs provide an incomplete summary of the research.

In an early study, McCormick, Finn and Scheips (1957) performed a principal components analysis of 44 traits required for 4,000 jobs, using U. S. Employment Service data, and obtained 7 major factors representing attribute requirements of jobs.

Subsequently, Palmer and McCormick (1961) developed a check-list of 177 worker-oriented job elements which were used in the analysis of 250 jobs, for which written job descriptions were available. A factor analysis of the data yielded 14 first order and 4 second order factors. This probing effort led to the development of a second-generation instrument called the Worker Activity Profile (WAP). This was developed on the basis of secondary sources such as the Dictionary of Occupational Titles and written job descriptions. Data based on this instrument for two samples of about 400 jobs each were then subjected to factor analyses by Gordon and McCormick (1963) and Cunningham and McCormick (1964); written job descriptions were used as the sources of job information. Both studies yielded similar results (21 of 23 dimensions were common to both analyses), and Cunningham and McCormick (1964) devised a method for estimating job requirements from the variables in the Worker Activity Profile.

In short, this early work suggested that the world of work could be organized into a relatively small number of factors using the Worker Activity Profile as a tool for assessing job descriptions and attribute requirements. It was also possible to estimate the trait requirements of a job from the items of the WAP using special statistical procedures.

The success of these early studies led to the development of the next generation of the basic job analysis instrument, this being called the Position Analysis Questionnaire (PAQ). A new series of investigations was carried out with this instrument. The new program differed

from the old in two important ways: (a) the PAQ is more comprehensive and reliable than the WAP (McCormick, Jeanneret and Mecham, 1969a); and (b) data from the direct analysis of jobs with the PAQ were used rather than indirect sources such as job descriptions and DOT information.

The development of the Position Analysis Questionnaire has been described by McCormick, Jeanneret and Mecham (1969a). This comprehensive questionnaire contains 189 job elements which are intended to characterize the human behavior required in different jobs. The elements are grouped into the following six divisions.

1. Information input
2. Mediation processes
3. Work output
4. Interpersonal activities
5. Work situation and job context
6. Miscellaneous aspects

Data based on the Position Analysis Questionnaire have been used in two main ways, namely: (a) for the purpose of deriving estimates of the human attributes (aptitudes, interests, physical capacities, etc.) that a job requires; and (b) as the basis for identifying job dimensions. Mecham and McCormick (1969a) developed the attribute requirements (68) for the job elements (178) in the PAQ. In short, they used PAQ descriptions of individual jobs as data for deriving estimates of the human characteristics needed to perform those jobs. To accomplish this task, 68 attributes were selected as relevant to different kinds of work

performance. Raters (primarily industrial psychologists) estimated the relevance of each attribute to the elements of the PAQ. Median attribute ratings were derived, and their reliabilities were estimated, most of these being in the .80's and .90's. This estimation of the attribute requirements from the PAQ means that it may be possible to establish useful job requirements using only job analysis data; that is, the usual situational validation of predictors might be ignored. In a related study, Mecham and McCormick (1969c) used the PAQ to estimate the attribute requirements of jobs, and validated these synthetic estimates against data based on the General Aptitude Test Battery (GATB) of the U. S. Employment Service. The results clearly indicate that the PAQ (a comprehensive job analysis) can be used to estimate the aptitudes that jobs require.

Finally, Jeanneret and McCormick (1969) investigated the hypothesis that there is "some structure underlying the domain of human work." Using 536 job analyses obtained by the PAQ, they performed principal component analyses of PAQ items which resulted in 5 overall factors and 27 divisional job dimensions. The divisional dimensions resulted from independent factor analyses of each of the major divisions of the PAQ. They also performed factor analyses of the PAQ item attribute profiles developed by Mecham and McCormick (1969a). The six independent analyses produced 21 divisional dimensions. Generally, the job dimensions obtained from job analyses and from attribute profiles appear sensible and consistent with one another as well as with the related literature. Jeanneret and McCormick concluded that their

findings supported their main hypothesis, and the Purdue factors appear to have some valuable implications for job evaluation (Mecham and McCormick, 1969b), selection batteries, and synthetic test validations.

McCormick, Mecham and Jeanneret provided the authors of this article with the fruits of their work: 32 factor scores in standard score form for a sample of 879 occupations, including five overall factor scores and 27 factor scores resulting from factor analyses of the job elements within each of the six subdivisions of the PAQ (Jeanneret and McCormick, 1969; or Jeanneret and McCormick, in press).

The Purdue data were used for two purposes: (a) to determine the relationship between the Holland classification and the Purdue job factors, and (b) to extend the Holland classification to more occupations.

The first task was accomplished as follows: The Purdue jobs (832 of 879) were classified into the Holland categories. Forty-seven jobs were not classifiable, mainly because they had unusual occupational titles which could not be located in the DOT, and were eliminated from further consideration. Independent classifications of the remaining 832 Purdue jobs by two people resulted in 80% agreement. The other 20% were resolved by discussion.

A simple analysis of variance across five Holland occupational classes was performed for each of the 32 Purdue factors. (The Artistic class was omitted because the Purdue data contained only two Artistic jobs.) The results of this analysis are in Table 1, which gives the mean and standard deviation for each Purdue

Table 1

Relation of Holland Classification (Occupational Categories) to The Purdue Factored Dimension Scores for 832 Occupations

Purdue Occupational Dimension		Holland Classification Real	Int	Soc	Conv	Ent	F
JD 19 Staff Related Activities	X	-.06	.81	.40	.09	-.56	22.20
	SD	.68	1.45	1.01	.88	1.36	
JE 22 Unpleasant Hazardous Physical Environment	X	.38	-.48	-.32	-.53	-.31	50.78
	SD	1.09	.36	.44	-.42	.55	
*JE 23 Personally Demanding Situations (-Social)	X	.42	-.51	-1.20	.26	-1.17	148.58
	SD	.54	.96	1.47	.61	1.04	
JF 26 Unstructured vs. Structured Work	X	-.20	.62	.63	-.31	.75	44.83
	SD	.96	.73	.76	.87	.64	
JF 25 Attentive-Discriminating Work Demands	X	.06	.66	-.19	-.32	.27	11.38
	SD	1.09	1.02	.97	.94	.89	
*JF 24 Businesslike Work Situations (Realistic)	X	.55	-.60	-.16	-.63	-1.01	168.62
	SD	.64	.71	.94	.72	.72	
JF 27 Variable vs Regular Work Schedule	X	.18	-.43	-.12	-.37	.05	13.31
	SD	1.12	.62	.81	.66	.96	
JO 1 Decision-Communication-Social Responsibilities	X	-.40	.87	.76	-.30	1.45	198.01
	SD	.64	.60	.92	.60	.82	
*JO 2 Skilled Activities (Investigative)	X	.30	.85	-.42	-.47	-.39	45.14
	SD	1.07	.80	.70	.47	.59	
JO 3 Physical Activities-Related Environment Conditions	X	-.24	.45	-.10	.44	.19	22.97
	SD	1.08	.60	.69	.60	.67	
JO 5 Information Processing Activities	X	.40	-.58	-.09	-.86	.08	85.93
	SD	.84	.80	.77	.88	.64	
JO 4 Equipment - Vehicle Operation	X	.16	-.14	-.07	-.33	-.06	10.05
	SD	1.12	.73	.59	.51	.68	
JA 2 Perceptual Interpretation	X	.10	.52	.11	-.24	-.30	9.71
	SD	1.03	1.15	1.08	.72	.67	
JB 8 Decision-Making	X	-.24	1.09	.26	-.33	1.20	91.51
	SD	.84	.64	.91	.72	.78	
JB 9 Information Processing	X	-.47	.85	.38	.78	.03	87.01
	SD	.79	1.04	1.05	.89	.82	

Relation of Holland Classification to The Purdue Factored Dimension Scores

Occupational Dimension		Real	Int	Soc	Conv	Ent	F
JC 10 Machine - Process Control	X	.34	.05	-.37	-.36	-.51	36.36
	SD	1.04	.89	.58	.67	.65	
JC 14 Handling - Manipulating Activities	X	.19	-.49	-.01	.08	-.79	25.29
	SD	1.02	1.03	.94	.75	.79	
JC 12 Control-Equipment Operation	X	-.15	.26	.36	.17	.03	7.35
	SD	1.27	.45	.52	.54	.59	
JC 16 Skilled - Technical Activities	X	.08	-1.26	-.29	.30	-.27	25.82
	SD	1.10	1.20	.88	.54	.65	
*JC 15 Use of Finger Device vs. Physical Work (-Conv.)	X	.34	[illegible]9	.15	-.87	.11	70.62
	SD	.83	.[illegible]5	1.10	.58		
JC 11 Manual Control - Coordinated Activities	X	-.31	-.02	[illegible]	.36	.35	29.23
	SD	1.14	.97	.57	.49	.46	
JC 13 General Body Activity	X	-.07	.12	-.22	.20	.10	4.14
	SD	1.13	.82	.99	.62	.63	
*JD 17 Communication of Decisions - Judgments (Ent.)	X	-.41	.71	.76	-.30	1.55	219.98
	SD	.48	.65	.97	.66	1.05	
JD 18 Job Related Information Exchange	X	-.36	.22	-.03	.59	.49	47.16
	SD	.76	1.02	.95	.97	1.19	
JD 21 Public-Related Contact	X	-.11	.28	-.05	.37	-.20	11.48
	SD	.86	.80	.88	.84	1.24	
JD 20 Supervisor-Subordinate Relationships	X	-.16	-.14	.09	.22	.25	7.97
	SD	.93	.77	.97	.93	1.13	
JA 3 Information from People	X	-.50	.82	.75	.15	1.12	130.49
	SD	.82	.66	.85	.65	.78	
JA 4 Visual Imput from Distal Sources	X	-.20	.26	.06	.36	.06	13.31
	SD	1.08	.55	.86	.66	.75	
JA 1 Visual Input from Devices-Materials	X	.31	.42	-.40	-.48	-.33	39.74
	SD	1.04	.82	.68	.54	.67	
JA 5 Evaluation of Information from Physical Sources	X	-.01	.20	-.43	.31	-.17	11.19
	SD	1.08	.80	.85	.41	1.01	
JA 6 Environmental Awareness	X	.11	.37	-.33	-.15	-.04	6.26
	SD	1.04	1.28	.87	.76	1.08	
JA 7 Awareness of Body Movement Posture	X	-.02	.08	-.25	.16	-.05	2.88
	SD	1.07	1.27	1.09	.64	.91	

Note. For a complete account of the meaning of the Purdue Dimension scores, see Jeanneret and McCormick (1969) or Jeanneret and McCormick, in press. The "JO" dimensions resulted from an overall components analysis of the Position Analysis Questionnaire while dimensions labelled "JA 1" through "JF 27" resulted from separate analyses of each division in the PAQ. $F_{001} = 4.62$

Occupational Dimension for the occupations classified as Realistic, Intellectual, Social, etc. The results in Table 1 are significant--all F tests are beyond the .001 level except one--and the implied relationships between Holland classes and Purdue factors are usually sensible and expected (see Jeanneret and McCormick, 1969; and Holland, 1966b; for complete explanations of the concepts in this table).

The evidence in Table 1 is important, because it demonstrates that the Holland classification, developed almost entirely from psychological data, also encompasses more objective, situational data about jobs. Conversely, the Purdue factors encompass the Holland classification. Put another way, the interpretation of class membership in either classification scheme has been strengthened and expanded.

The second task was to use the Purdue data to create VPI profiles so that more occupations could be added to the Holland classification. Using Table 1, five Purdue factors were selected to represent the corresponding VPI scales and their associated occupational classes. These factors are identified with asterisks in Table 1. To obtain five-variable VPI profiles for each of the 832 jobs, a computer was instructed to create a five-letter profile, ranging from the highest to lowest standard score using the five Purdue factors. About 54% of the profiles had their peak or high point in agreement with their subjective classification obtained earlier. The errors of classification appeared sensible (46%) although large in number; that is, if an occupation was misclassified, it was usually misclassified in an adjacent rather than distant category.

Other occupational data. Other VPI profile data were available from earlier published sources (Holland et al., 1969; and Holland, 1965).

Resolution of divergent data. The final task was to integrate the data obtained from the Campbell form of the VPI using Strong data, from the Purdue factors, and from the testing of employed adults or occupational aspirants with the VPI. To accomplish this task, the data for each occupation were put on a card which showed the VPI profile, the number of subjects, the occupational title, and the source of data. Each occupation was represented by 1 to 42 cards, and the cards were collated by occupation.

To produce a single profile for an occupation, a variety of numerical, clerical, and artistic strategies were used. They included: (a) Counting the number of times a particular VPI letter or code occurred in the first, the second, or the third place in various profiles obtained from different sources and samples. (b) Weighting subjectively the reliability and validity of one data source versus another. (c) Evaluating divergent profiles, particularly so that the data for men and women would be considered. In most cases, simple counting procedures were sufficient to arrive at a single profile. In general, divergencies were not great and resolutions of discrepancies were tied closely to the data. Appendix C illustrates the degree of convergence or divergence obtained by the use of VPI, Purdue, and Strong data.

Addition of missing profiles. A review of the 1960 census (Priebe, 1968) revealed that this revised classification contained all but 31 of the common occupations in the U. S. (50,000+). The authors decided to remedy this deficiency by estimating three-letter VPI profiles for the 31 occupations and adding them to the classification. This artistic process was performed by imagining which of the classified occupations these new occupations resembled. Because DOT codes provide estimates of the "data," "people," and "things" competencies demanded by an occupation, the values of these variables for occupations without empirically estimated VPI profiles could be compared with the DOT patterns of the various subclasses in the present classification. In this way, the validity of an occupation's proposed clasification could be examined.

The Classification

The 431 occupations in this classification (Table 2) include all of the most common occupations in the United States. They are arranged in a system that uses the six Holland code letters:

Realistic occupations (R) include skilled trades, many technical and some service occupations.

Investigative[1] occupations (I) include scientific and some technical occupations.

Artistic occupations (A) include artistic, musical, and literary occupations.

Social occupations (S) include educational and social welfare occupations.

Enterprising occupations (E) include managerial and sales occupations.

Conventional occupations (C) include office and clerical occupations.

The three letter codes in the fourth column provide crude descriptions of occupations. For example, the code of ESC for salesman means that salesmen resemble people in Enterprising occupations most of all; that they resemble people in Social occupations somewhat less; and people in Conventional occupations still less. In this way, the codes provide a brief summary of what an occupation is like by showing its degrees of resemblance to three occupational groups.

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[1]The category "Intellectual" has been renamed "Investigative" for two reasons: (a) The literal meanings of "investigative" are to track down, trace out, or to search. These denotations appear sensible for describing the core activities of scientists. At the same time, these meanings appear more apt and useful in combination with other categories. For example, machinists are classified as Realistic-Investigative as essentially they track down realistic problems. And (b) "Intellectual" offended people in some categories, especially Artistic types.

The six-digit numbers in the second column are from the Dictionary of Occupational Titles (United States Employment Service, 1965), which can be found in most libraries, employment offices and counseling offices. The DOT contains descriptions of occupations and estimates of interests and aptitudes associated with each occupation.

The single digit in column 3 indicates the level of general educational development an occupation demands. Levels 5 and 6 mean college training is necessary. Levels 3 and 4 mean high school and some college, technical, or business training is needed. Levels 1 and 2 mean that an occupation requires only elementary school training or no special training at all. In general, these levels are only estimates and should not be regarded as precise requirements.

An alphabetical index is provided by Appendix A. A cross-index for the Holland classification and the census codes is given in Appendix B.

Table 2

REALISTIC OCCUPATIONS

	DOT	ED	Code
Architectural Draftsman	017.281	4	RIS
Geographer	029.088	5	RIS
Forester	040.081	5	RIS
Industrial Arts Teacher	091.228	5	RIS
Radio Operator	003.187	5	RIS
Electrician	820.281	4	RIS
Induction Machine Operator	504.380	4	RIS
Jeweler	700.281	4	RIS
Overhauler (Textile)	628.281	4	RIS
Power Plant Operator	950.782	4	RIS
Powerhouse Repairman	631.281	4	RIS
* Skilled tradesman (n. e. c.)		4	RIS
Tool and Die Maker	601.280	4	RIS
Utility Man	899.281	4	RIS
Babbiter	709.884	3	RIS
Baker	526.781	3	RIS
Cook	315.381	3	RIS
Filling Station Attendant	915.867	3	RIS
Heat Treater	504.782	3	RIS
Quality Controlman	539.384	3	RIS
Welder	812.884	3	RIS
Wire Drawer	614.782	3	RIS
Mechanical Engineer	007.081	6	RIE
Civil Engineer	005.081	5	RIE
Industrial Engineer Technician	012.288	5	RIE
Mechanical Engineer Technician	007.181	5	RIE
Aircraft Mechanic	621.281	4	RIE
Auto Turret Lathe Opr.	604.380	4	RIE
Automobile Mechanic	620.281	4	RIE
Draftsman	017.281	4	RIE
Electroplater	500.380	4	RIE
Lineman (tel. and tel.)	822.381	4	RIE
Loom Changer	683.380	4	RIE
Machine Repairman	600.280	4	RIE
Machinist	600.280	4	RIE
Maintenance Man	899.281	4	RIE
Mechanic (n. e. c.)	600.280	4	RIE
Pipe Coverer	863.381	4	RIE
Plumber	862.381	4	RIE
Radial Drill Press Operator	606.380	4	RIE
Sheet Metal Mechanic	804.281	4	RIE
Automatic Screw Machine Operator	611.782	3	RIE
Compressor House Operator	953.782	3	RIE
Forging Press Operator	611.782	3	RIE
Humidifier Man	950.885	3	RIE
Metal Saw Operator	667.782	3	RIE
Milling Machine Operator	605.885	3	RIE
Roofer	866.381	3	RIE
Sawyer	690.782	3	RIE
Upholsterer	806.887	3	RIE
Cloth Baler	929.885	2	RIE
Machine Operator(n. e. c.)		2	RIE
Boiler Operator	950.782	4	RIC
Carpenter	860.381	4	RIC
Farmer	421.181	4	RIC
Load Checker	952.387	4	RIC
Stone Cutter	771.281	4	RIC
Assembler	827.884	3	RIC
Boring-Machine Operator	606.782	3	RIC
Drill Press Operator	606.782	3	RIC
Dry Cleaner	362.782	3	RIC
Grinder (n. e. c.)	603.782	3	RIC
Heater-Billets	613.782	3	RIC

* not elsewhere classified © Copyright 1970 by John L. Holland

REALISTIC OCCUPATIONS

	DOT	ED	Code
Instrument Mechanic	710.281	4	RCI
Assistant Biller	219.388	3	RCI
Painter (house, bldg., equipment)	840.781	3	RCI
Photo Touch-up Operator	970.281	3	RCI
Scarfer Machine Tender	690.885	3	RCI
Smash Hand (Textile)	683.885	3	RCI
Machine Cleaner	699.887	2	RCI
Machine Tender	680.885	2	RCI
Bricklayer	861.381	3	RCS
Dressmaker	785.361	3	RCS
Furnaceman	558.782	3	RCS
Mail Carrier	233.388	3	RCS
Meter Reader	239.588	3	RCS
Plasterer	842.781	3	RCS
Industrial truck operator	922.883	2	RCS
Material handler	929.887	2	RCS
Product Finisher	920.887	2	RCS
Spinner	682.885	2	RCS
Offset Press man	651.782	4	RCE
Craneman	921.883	3	RCE
Tractor Operator	929.883	3	RCE
Filling Doffer	689.886	2	RCE
Straddle Truck Operator	922.883	2	RCE
Traveler Changer (Textile)	682.887	2	RCE
Warp Doffer	689.886	2	RCE
Battery Filler	683.886	1	RCE

INVESTIGATIVE OCCUPATIONS

	DOT	ED	Code
Business Administration Professor	090.228	6	IAS
College Professor	090.228	6	IAS
Internist-Physician	070.108	6	IAS
Anthropologist	055.088	6	IAR
Astronomer	021.088	6	IAR
Dental Educators	072.108	6	IAR
Pathologist	070.108	6	IAR
Physicist	023.081	6	IAR
Production Planner	012.188	5	ISC
Medical-Laboratory Ass't.	078.381	4	ISC
Repairman, TV	720.281	4	ISC
Offset Press Operator	651.885	2	ISC
Biologist	041.081	6	ISR
Osteopath	071.108	6	ISR
Chiropractor	079.108	5	ISR
Mathematics Teacher	091.228	5	ISR
Medical Technologist	078.381	5	ISR
Natural Science Teacher	091.228	5	ISR
Optometrist	079.108	5	ISR
Physician	070.108	6	ISA
Psychiatrist	070.108	6	ISA
Psychologist	045.088	6	ISA
Sanitary Engineer	005.081	5	IEC
Duplicating Machine Opr.	207.782	3	IER
Bacteriologist	041.081	6	IES
Physiologist	041.081	6	IES
Pharmacist	074.181	5	IES
Research Analyst	011.281	4	IES
Computer Programmer	020.188	5	ICR
Tool Designer	007.081	5	ICR
Computer Operator	213.382	4	ICR
Equipment Repairman	620.281	4	ICR
Accounting Machine Opr.	215.388	4	ICR
Photolithographer	972.382	4	ICR
Research Assistant	199.384	4	ICR
Tester, TV Tubes	720.068	3	ICR
Tire Builder	750.884	3	ICR
Winder Man, Paper Machine	640.782	3	ICR
Solderer, Production Line	814.884	2	ICR
Research Engineer	002.081	6	ICS
Bowling Alley Equipment Mechanic	829.281	3	ICS
Materials Engineer	005.081	5	ICE
Quality Control Technician	019.281	5	ICE
Accounting Machine Repairman	633.281	4	ICE
Switchman (tel. and tel.)	822.281	4	ICE

INVESTIGATIVE OCCUPATIONS (CONTINUED)

	DOT	ED	Code
Chemist	022.081	6	IRA
Geologist	024.081	6	IRA
Mathematician, Statistician Actuary	020.088	6	IRA
Surgeon	070.108	6	IRA
Agronomist	040.081	6	IRS
Animal Husbandryman	040.081	6	IRS
Botanist	041.081	6	IRS
Natural Scientist (n.e.c.)	023.081	6	IRS
Oceanographer	024.081	6	IRS
Zoologist	041.081	6	IRS
Engineer Aide	007.181	5	IRS
Sound Man	194.282	5	IRS
Veterinarian	073.108	5	IRS
Glazier	638.281	4	IRS
Loom Fixer	683.280	4	IRS
Sheet Metal Man	804.281	4	IRS
X-Ray Technician	078.368	4	IRS
Tube Machine Operator	690.782	3	IRS
Aeronautical Engineer	002.081	6	IRE
Chemical Engineer	008.081	6	IRE
Dentist	072.108	6	IRE
Electrical Engineer	003.081	6	IRE
Metallurgical Engineer	011.081	6	IRE
Test Engineer, Aircraft	002.081	6	IRE
Chemical Laboratory Technician	022.281	5	IRE
Aerospace Engineering Technician		4	IRE
Air Control Mechanic	637.281	4	IRE
Electronic Technician	729.381	4	IRE
Metallurgist, Assistant	011.281	4	IRE
Millwright	638.281	4	IRE
Set-Up Man	616.380	4	IRE
Extrusion Machine Operator	557.782	3	IRE
Punch Press Operator	615.782	3	IRE
Compound Man	224.687	2	IRE
Spiral Machine Operator	692.885	1	IRE
Model Maker	149.281	5	IRC
Airplane Pilot	196.283	5	IRC
Engineering Technician(n.e.c.)	007.181	5	IRC
Engineer (n.e.c.)	007.081	5	IRC
Cartographer	017.281	4	IRC
Horizontal Boring Mill Opr.	606.280	4	IRC
Instrument Repairman	710.281	4	IRC
Laboratory Technician	029.381	4	IRC
Military Officers		4	IRC
Pipe Fitter	862.381	4	IRC
Test and Troubleshooter	729.381	4	IRC
Tester, Electronic Systems	729.381	4	IRC
Tool Maker	601.280	4	IRC
Turret Lathe Operator	604.380	4	IRC
Inspector (n.e.c.)	504.387	3	IRC
Slitter Machine Operator	699.782	3	IRC
Pulp and Paper Tester	539.384	3	IRC

ARTISTIC OCCUPATIONS

	DOT	ED	Code
Drama Coach	150.028	5	ASE
English Teacher	091.228	5	ASE
Journalist-Reporter	132.268	5	ASE
Speech-Drama Teacher	150.028	5	ASE
Philosopher	090.228	6	ASI
Art Teacher	149.028	5	ASI
Literature Teacher	091.228	5	ASI
Music Teacher	152.028	5	ASI
Musician	152.048	5	ASI
Advertising Manager	163.168	5	AES
Entertainer (Dancer, Singer)	159.048	5	AES
Public Relations Man	165.068	5	AES
Writer	130.088	6	AIS
Actor-Actress	150.048	5	AIS
Advertising Man	164.068	5	AIS
Foreign Language Interpreter	137.268	5	AIS
Interior Decorator	142.051	5	AIS
Architect	001.081	6	AIR
Artist	144.081	5	AIR
Photographer	143.062	4	AIR

SOCIAL OCCUPATIONS

	DOT	ED	Code
Director Social Service	195.118	6	SEC
Compensation Advisor	169.118	5	SEC
Dorm Director	045.108	5	SEC
Employment Representative	166.268	5	SEC
Funeral Director	187.168	5	SEC
Interviewer	166.268	5	SEC
Job Analyst	166.088	5	SEC
Manager, Operations	183.118	5	SEC
Traffic Manager	184.168	5	SEC
Rehabilitation Counselor	045.108	5	SEC
Employee Benefits Approver	166.168	4	SEC
Food Service Supervisor	319.138	4	SEC
Salesman, Public Utilities	257.358	4	SEC
Bartender	312.878	3	SEC
Claim Adjuster	241.168	5	SER
Production Expediter	221.168	5	SER
Health and Welfare Coordinator	166.168	4	SER
Educational Administrator	090.118	6	SEI
Training Director	166.118	6	SEI
Chamber of Commerce Executive	187.118	5	SEI
Environment Health Engr.	079.118	5	SEI
Historian	052.088	5	SEI
History Teacher	091.228	5	SEI
Home Service Representative	278.258	5	SEI
Master Dyer	582.138	5	SEI
Counselor	045.108	5	SEA
Foreign Service Officer	188.118	5	SEA
Home Economist	096.128	5	SEA
Saleswoman, Retail	289.358	3	SEA
Production Scheduler	221.168	5	SCI
Recreation Director	187.118	6	SCE
Executive Housekeeper	187.168	5	SCE
Order Service Corres.	204.288	4	SCE
Ticket Agent	919.368	4	SCE
Extension Agent	096.128	5	SRI
Gas Appliance Serviceman	637.281	4	SRI
Weaver	683.782	3	SRI
Physical Education Teacher	153.228	5	SRE
Houseparent	359.878	3	SRE
Food Service Worker	315.381	3	SRC
Ward Attendent	359.878	3	SRC
Social Scientist (n. e. c.)		6	SIA
Sociologist	054.088	6	SIA
Professional Nurse	075.378	5	SIA
Social Worker	195.108	5	SIA
Dental Technician	712.381	4	SIA
Personnel Director	166.118	5	SIE
Dietitian	077.168	4	SIE
Inspector Public Admin.	168.287	4	SIE
Male Ward Nurse	075.378	4	SIE

SOCIAL OCCUPATIONS (CONTINUED)

	DOT	ED	Code
Community Recreation Administrator	195.118	6	SIC
School Superintendent	091.118	6	SIC
Food and Drug Inspector	168.287	5	SIC
Politician		5	SIC
Social Science Teacher	091.228	5	SIC
YMCA Physical Director	195.168	5	SIC
YMCA Secretary	195.168	5	SIC
Guidance Counselor	045.108	5	SIC
Industrial Nurse	045.108	5	SIR
Physical Therapist	079.378	4	SIR
Housewife			SAE
Home Economics Teacher	091.228	5	SAE
Foreign Language Teacher	091.228	5	SAE
Speech Teacher	091.228	5	SAE
Teacher (n.e.c.)		5	SAE
Cosmetologist	332.271	4	SAC
Clergyman	120.108	6	SAI
Political Scientist	051.088	6	SAI
Elementary Teacher	092.228	5	SAI
Librarian	100.168	5	SAI
Special Education Teacher	094.228	5	SAI
Dental Assistant	079.378	4	SAI
Dental Hygienist	078.368	4	SAI
Licensed Practical Nurse	079.378	4	SAI

EXTERPRISING OCCUPATIONS

	DOT	ED	Code
Manager-Farm	409.168	4	ECR
Assistant Shipper	222.587	3	ECR
Economist	050.088	6	ECI
Engineering Administrator	002.081	6	ECI
Market Analyst	050.088	6	ECI
Real Estate Salesman	250.358	4	ECI
Buyer-Grain	162.168	5	ECS
Insurance Underwriter	169.188	5	ECS
Buyer	162.158	4	ECS
Real Estate Agent	250.358	4	ECS
Supervisor, Ticket Sales	912.138	4	ECS
Salesman, Technical Prod.	284.258	5	EIS
Maintenance Foreman	891.138	4	EIS
Operations-Research Analyst	020.088	6	EIC
Plant Engineer	007.187	5	EIR
Sales Engineer	010.151	5	EIR
Lawyer, Judge, Attorney	110.118	6	EAS
Radio/TV Announcer	159.148	5	EAR
Principal	091.118	6	ESC
Administrative Assistant	169.168	5	ESC
Nursing Supervisor	075.128	5	ESC
Branch Manager	186.118	5	ESC
Director, Industrial Relations	166.118	5	ESC
Employment Interviewer	166.268	5	ESC
Government Officer		5	ESC
Insurance Manager	186.118	5	ESC
Manager/Administrator (n.e.c.)		5	ESC
Manager, Restaurant/Bar	187.168	5	ESC
Personnel Assistant	166.118	5	ESC
Personnel Manager	166.168	5	ESC
Personnel Recruiter	166.268	5	ESC
Placement Specialist	166.268	5	ESC
Production Manager	183.118	5	ESC
Salary & Wage Administrator	169.118	5	ESC
Sales Manager	163.118	5	ESC
Benefits Consultant	166.168	4	ESC
Customer Services Manager	912.138	4	ESC
Demonstrator	297.458	3	ESC
Dispatcher, Motor Vehicle	919.168	3	ESC
Salesman (n.e.c.)		3	ESC
Occupational Therapist	079.128	4	ESR
Route Salesman	292.358	3	ESR
Director of Admin. Services	195.118	6	ESI
Director of Guidance	045.118	5	ESI
Industrial Engineer	012.188	5	ESI
Manager, Wage & Salary Administrator	169.118	5	ESI

ENTERPRISING OCCUPATIONS (CONTINUED)

	DOT	ED	Code
Systems Analyst, Business EDP	012.168	5	ESI
Department Store Mgr.	185.168	4	ESI
Director, Compensation & Benefits	166.168	4	ESI
Life Insurance Salesman	250.258	4	ESI
Manpower Adviser	166.168	4	ESI
Encyclopedia Salesman		4	ESI
Security Salesman	251.258	6	ESA
Airline Stewardess	352.878	3	ESA

CONVENTIONAL OCCUPATIONS

	DOT	ED	Code
Timekeeper	215.488	4	CRI
IBM Key Punch Operator	213.582	3	CRI
IBM Tabulating Machine Operator	213.782	3	CRI
Bagger Operator	920.885	2	CRI
Exhaust Operator	725.884	2	CRI
Finisher-Wrapper	920.885	2	CRI
Bus Driver	913.463	3	CRS
File Clerk	206.388	3	CRS
Teller	211.468	3	CRS
Mail Clerk	232.368	4	CRE
Professional Truck Driver-Trainer	905.883	3	CRE
Banker	186.118	5	CIS
Certified Public Accountant	160.188	5	CIS
Surveyor	018.188	5	CIS
Time Study Analyst	012.188	5	CIS
Auto Writing Machine Operator	215.388	4	CIS
Office Machine Serviceman	633.281	4	CIS
Accounting/Statistical Clerk	219.488	3	CIS
High-Speed Printer Operator	213.382	3	CIS
Layout Typist	203.138	4	CIE
Office Worker (n.e.c.)		4	CIE
Payroll Clerk	215.488	4	CIE
Statistical Typist	203.588	3	CIE
Stenographer	202.388	3	CIE
Office Machine Operator	216.488	3	CIR
Business (Commercial) Teacher	091.228	5	CSE
Personnel Clerk	205.368	4	CSE
Secretary	201.368	4	CSE
Receptionist	237.368	3	CSE
Telephone Operator	235.862	3	CSE
Reservations Agent	912.368	4	CSR
Sewing Machine Operator	787.782	3	CSR
Traffic Checker	919.368	3	CSR
Bookkeeper	210.388	4	CSI
Cashier	211.368	4	CSI
Installer Repairman	822.281	4	CSI
Water Pollution Control Specialist	168.287	4	CSI
Medical Secretary	201.368	4	CSA
Data Processing Worker		4	CER
Finance Expert	020.188	5	CEI
Personnel Secretary	201.368	4	CEI
Accountant	160.188	5	CES
Credit Manager	168.168	5	CES
Clerk (n.e.c.)	209.388	3	CES
Clerk-Stenographer	202.388	3	CES

Evaluation

A classification should be evaluated primarily in terms of its avowed purpose or purposes. In the case of the present classification, such evaluations must wait until it has undergone more pragmatic and experimental tests by practitioners and researchers in occupational research, vocational guidance, vocational education, and social science. At the same time, by virtue of its construction and use in theoretical studies, the classification has many desirable characteristics:

1. It implements a relatively explicit theory for interpreting what it means for a person or occupation to belong to a particular occupational category or subcategory (Holland, 1966b).

2. It organizes in expected ways a great range of psychological information about persons interested in various kinds of work (Holland, 1962, 1963, 1963-1964, 1968a).

3. Its main categories, as well as their subcategories, provide efficient predictions of vocational aspirations and stability (Holland and Whitney, 1968).

4. The relationships (intercorrelations) among the major categories can be ordered according to a hexagon in which distances between occupational classes are inversely proportional to the size of the correlations between them. This spatial arrangement facilitates the interpretation of the degrees of similiarity and difference among the categories (Holland and Whitney, 1968; Holland, et al., 1969).

5. It satisfies the three logical principles of classification. Each occupation is classified into a single class or subclass. The principle for classification is always based upon the same empirical procedure. (The average VPI scores for the Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic Scales are profiled. Occupations are assigned to classes and subclasses according to their three highest scale scores.) The classification is comprehensive, because it deals with all the common occupations in the labor force.

6. The classification is practical for it requires an understanding of only six concepts and of the meaning of general educational development. All other implications involve simple combinations of these concepts.

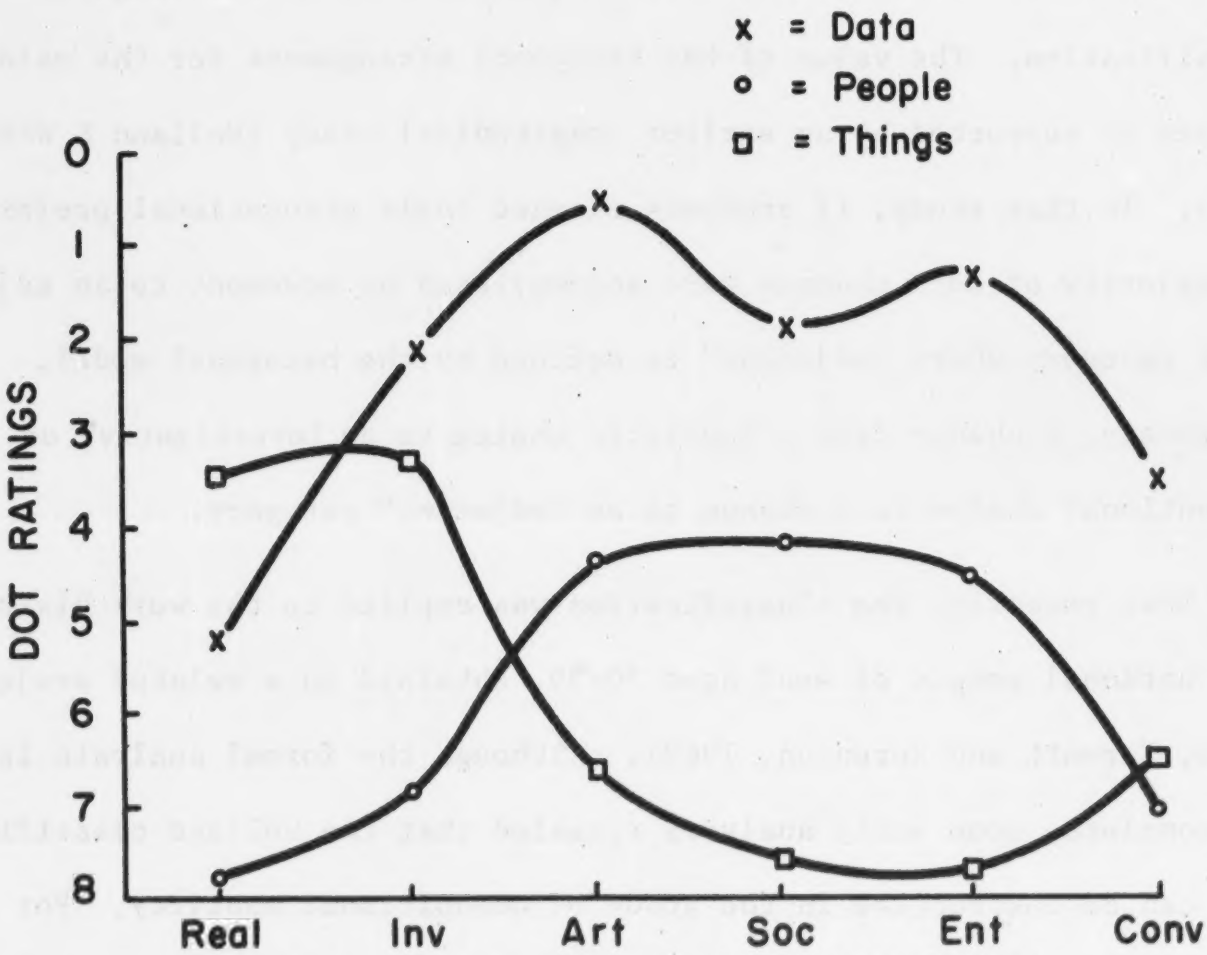
7. Revisions or extensions of the classification require only the application of a single explicit principle--the testing of an occupational or educational group to ascertain its interest profile.

Some internal evidence and some evidence from related work lend credence to the present classification. The graph in Figure 2 shows the average of each of the last three DOT digits for occupations in each of the Holland categories. The fourth DOT digit represents the degree of involvement in data required for an occupation. An occupation having a fourth DOT digit of "0" requires a high level of skilled involvement with data, while a value of 8 means that no handling of data is needed for an occupation. Similarly, the fifth and sixth DOT digits describe the relationship of the occupation to people and to things, respectively. For example, the DOT number for School Superintendent, 091.118, indicates that the involvement with data is high (1), with people is high (1), but with things is low (8). In figure 2, an Artistic person's involvement with data (which include concepts and ideas) is extremely high (0.5), whereas his involvement with people is much lower (4.3), and his involvement with things is lowest (6.6). A review of Figure 2 for the other types shows that the patterning of each type's average DOT digits is distinct, averaging about one standard deviation difference.

At this time, the practical outcomes of rearranging the main categories and subcategories following the hexagonal model are only partially explored. A review of this arrangement does suggest that the

Figure 2

The Relation of the Holland Occupational Categories to Levels of Talent for Coping with Data, People, and Things (DOT)



		Real	Inv	Art	Soc	Ent	Conv
Data:							
	X	5.2	2.1	0.5	1.9	1.3	3.5
	S.D.	2.7	2.2	0.9	1.6	1.3	2.1
People:							
	X	7.7	6.8	4.3	4.2	4.5	7.1
	S.D.	0.9	2.7	2.2	2.1	2.5	1.4
Things:							
	X	3.4	3.2	6.6	7.5	7.7	6.5
	S.D.	2.7	3.1	2.7	1.0	1.4	2.5
Number of Occupations		142	95	20	72	52	43

hexagonal model provides a more psychologically-based arrangement; that is, subgroups of occupations that seem to go together--because of their codes and therefore their assumed psychological similarity--appear to be placed close to each other more frequently than in the original classification. The value of the hexagonal arrangement for the main classes is supported by an earlier longitudinal study (Holland & Whitney, 1968). In that study, if students changed their occupational preference, the majority of such changes were accomplished by movement to an adjacent major category where "adjacent" is defined by the hexagonal model. Concretely, a change from a Realistic choice to an Investigative or Conventional choice is a change to an "adjacent" category.

Most recently, the classification was applied to the work histories of a national sample of men, aged 30-39, obtained in a related project (Blum, Karweit and Sorensen, 1969). Although the formal analysis is not complete, some early analyses revealed that the Holland classification can be instructive in the study of occupational mobility. For example, Table 3 shows that the majority of men worked in a single major occupational class rather than wandering from class to class. In addition, this study illustrates the predictive value of the classification. Table 4 shows the percentage of men who were still in a given class five and ten years after they obtained their first full-time job (i.e., the job held after completion of full-time education).

These tables are important because they demonstrate one of the ways that the classification can be used to study careers within the context of a single theory. Other data (not presented here) indicate

Table 3

Number and Percentage of Respondents Who Had Spent More Than Half of Their Full-Time Employment in the Same Holland Occupational Class

Holland Occupational Class	N	Percent
Realistic	466	55.1
Investigative	77	9.1
Artistic	11	1.3
Social	46	5.4
Enterprising	103	12.2
Conventional	76	9.0
Totals	779	92.1

Note: Based on months of full-time employment, from age 14 to date of interview, of a total sample of 851 nonblack males.

Table 4

Relation of Class of First Job to Class of Job
5 and 10 Years Later

Occupational Class Five Years Later

First Job Class	Real	Inv	Art	Soc	Ent	Conv	Other
Realistic	305	25	5	9	44	49	114
Investigative	15	35	1	0	4	4	7
Artistic	1	0	2	0	0	0	4
Social	2	2	0	30	2	2	11
Enterprising	10	5	0	0	43	2	13
Conventional	4	1	3	8	13	68	13
Other	4	0	0	0	0	0	

Occupational Class Ten Years Later

First Job Class	Real	Inv	Art	Soc	Ent	Conv	Other
Realistic	318	39	6	7	58	48	75
Investigative	13	18	2	0	4	1	28
Artistic	0	0	0	0	2	0	5
Social	1	0	0	13	1	2	32
Enterprising	7	4	0	2	41	5	14
Conventional	25	3	4	0	15	17	17
Other	8	2	0	1	1	1	

Note: For 5 years, 56.2% remain in the same class; for 10 years 48.5% remain in the same class. If the "other" category is ignored, these percentages become 62.0% and 69.6% respectively.

that the classification also has predictive value in the analysis of transitions from occupation to occupation within the careers of individuals.

Sociological studies of occupational mobility have tended to consider only the prestige dimension of occupations. Prestige, however, is by definition a vertical measure. Analyses of existing data, using the Holland classification, should illuminate the horizontal mobility of careers.

Despite this encouraging evidence, the classification still has some deficiencies, although they appear less serious than in the past. They include: (a) unstable definitions, because different samples of aspirants for and people employed in the same occupation produce similar but not always identical VPI profiles. Consequently, the precise place of an occupation in the classification is sometimes unclear. (b) The value of the hexagonal arrangement is only partially explored so that it should be termed promising rather than explicitly valuable. (c) The process of classification was performed by direct testing of student and employed samples, and by indirect testing of occupational samples (use of Purdue factors, Strong data, and old forms of the VPI), and by including 31 occupations classified without any specific assessment. And, (d) it was often necessary to reconcile divergent data about the same occupations.

Finally, the usefulness of the present classification is unclear relative to other occupational classifications such as those by Roe (1966), McCormick and his colleagues, the DOT, and the Census. Only

a systematic testing and evaluation would make the relative merits of these different schemes clear. Such an evaluation would depend on the criteria assumed and the relative weight given to each. Nevertheless, the authors believe that the present classification is superior to some of these earlier classifications, because it has more of the ideal and pragmatic properties listed earlier. This is not to say that these other schemes are not superior to the present classification for some purposes.

Some Practical Applications

The classification has many potential applications in vocational education, vocational guidance, personnel work, and in research on the psychology and sociology of occupations.

In vocational education, the classification has implications for the development of "curricular clusters" in secondary schools which would demand consonant competencies and interests. The classification also implies similar clusterings for reorganizing two- and four-year colleges. Whitney and Holland (unpublished manuscript) have already used it to propose a new curriculum for colleges. Courses on occupations, career libraries, career films, programs of visiting speakers, tours to places of employment, and other attempts to improve students' occupational information, can all be based on the classification. This should make it much easier to plan programs which, while not expensive or time-consuming, are representative of the world of work.

In vocational guidance, the classification can again be used to organize information about occupations, to interpret interest inventories (especially the VPI, although the Kuder and Strong can also be interpreted in terms of the classification. See Holland, 1966b, p. 37), to clarify the divergent occupational choices of persons in conflict, and to interpret the meanings in a person's work history. Holland (1970) has used the classification, along with a special assessment booklet, to develop a self-administered, vocational counseling device (The Self-Directed Search) which helps a person assess, score, and interpret his occupational possibilities. In rehabilitation work, the classification

can help disabled persons locate a new job which is psychologically similar to the old, when a physical disability demands a change.

The possible uses of the classification in personnel work are numerous. Many of the applications cited for vocational guidance apply also to this area, but the classification is likely to be particularly useful in two situations. First, in large organizations in which problems of staff development, transfer, promotion, and manpower planning have to be solved by moving personnel from one function to another. Second, in rapidly-changing organizations where technological developments and altered objectives necessitate the creation of totally new jobs. In these situations, especially, the classification has clear practical implications for recruitment and selection procedures, training programs, analysis and redesign of jobs, improvement of communication and co-operation within and between work groups, and for the general formation of personnel policies and practices. At a more macroscopic level, the classification provides a theoretical system for assessing the effects of national manpower recruiting and training policies.

In research on the psychology and sociology of occupations, the classification has a wide range of uses. Perhaps its most immediate pragmatic value will be to link Holland's theory of personality types and environmental models to occupational data, including occupational aspirations, the VPI scales, and work histories. Without a comprehensive classification, that theoretical work could have only limited application. In addition to this special use, the classification can be used to interpret or reinterpret occupational data from the census and other

surveys. As illustrated earlier in this report, work histories and occupational mobility can be analysed more thoroughly by employing this classification as well as the levels of prestige, salary, or education, which have traditionally been used in such studies. Occupational psychologists should find the classification helpful in studying job satisfaction, job performance, and their correlates.

Because the classification is based upon a theory which has some positive empirical support, any occupational data which can be reorganized by the classification can be interpreted with the aid of the theory. Because the classification incorporates the apparently endless variety of occupations into a manageable and comprehensible system, it can be quickly grasped and used by teachers and students, counselors and clients, personnel managers and occupational researchers. Thus it has both theoretical and practical strengths which should foster its future use and development.

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APPENDIX A

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE

	HOC	DOT	GED
Accountant	CES	160.188	5
Accounting Machine Operator	ICR	215.388	4
Accounting/Statistical Clerk	CIS	219.488	3
Actor, Actress	AIS	150.048	5
Administrative Assistant	ESC	169.168	5
Administrator, Community Recreation	SIC	195.118	6
Administrator, Educational	SEI	090.118	6
Administrator, Engineering	ECI	002.081	6
Administrator, Salary & Wage	ESC	169.118	5
Advertising Man	AIS	164.068	5
Advisor, Manpower	ESI	166.168	4
Agronomist	IRS	040.081	6
Air Control Mechanic	IRE	637.281	4
Airline Stewardess	ESA	352.878	3
Airplane Pilot	IRC	196.283	5
Animal Husbandryman	IRS	040.081	6
Anthropologist	IAR	055.088	6
Architect	AIR	001.081	6
Artist	AIR	144.081	5
Assembler	RIC	827.884	3
Astronomer	IAR	021.088	6
Automatic Screw Machine Operator	RIE	611.782	3
Auto Turret Lathe Operator	RIE	604.380	4
Auto Writing Machine Operator	CIS	215.388	4
Babbiter	RIS	709.884	3
Bacteriologist	IES	041.081	6
Bagger Operator	CRI	920.885	2
Baker	RIS	526.781	3
Banker	CIS	186.118	5
Barber	RSE	330.371	3
Bartender	SEC	312.878	3
Battery Filler	RCE	683.886	1
Benefits Consultant	ESC	166.168	4
Bill Collector	RSC	240.368	3
Biller, Assistant	RCI	219.388	3
Biologist	ISR	041.081	6
Boiler Operator	RIC	950.782	4
Bookkeeper	CSI	210.388	4
Boring-Machine Operator	RIC	606.782	3
Botanist	IRS	041.081	6
Bowling Alley Equipment Mechanic	ICS	829.281	3
Bricklayer	RCS	861.381	3
Bus Driver	CRS	913.463	3
Business Administration Professor	IAS	090.228	6
Business EDP Systems Analyst	ESI	012.168	5
Butcher	RSE	316.884	3
Buyer	ECS	162.158	4
Buyer, Grain	ECS	162.168	5
Carpenter	RIC	860.381	4
Cartographer	IRC	017.281	4
Cashier	CSI	211.368	4
Caster	RIC	502.782	2

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, con'd.

	HOC	DOT	GED
Certified Public Accountant	CIS	160.188	5
Chamber of Commerce Executive	SEI	187.118	5
Chemist	IRA	022.081	6
Chiropractor	ISR	079.108	5
Claim Adjuster	SER	241.168	5
Clergyman	SAI	120.108	6
Clerk, File	CRS	206.388	3
Clerk, Mail	CRE	232.368	4
Clerk, Payroll	CIE	215.488	4
Clerk, Personnel	CSE	205.368	4
Clerk, Shipping-Receiving	RIC	222.387	3
Clerk, Stenographer	CES	202.388	3
Clerk, Stock	RES	223.387	3
Clerk (n.e.c.)	CES	209.388	3
Cloth Baler	RIE	929.885	2
Cloth Doffer	REC	689.886	2
Coal Equipment Operator	RSE	922.883	3
College Professor	IAS	090.228	6
Compensation Advisor	SEC	169.118	5
Compound Man	IRE	224.687	2
Compressor House Operator	RIE	953.782	3
Computer Operator	ICR	213.382	4
Computer Programmer	ICR	020.188	5
Cone Biller	REC	219.388	3
Cook	RIS	315.381	3
Core Builder	RIC	690.885	2
Correspondent, Order Service	SCE	204.288	4
Cosmetologist	SAC	332.271	4
Counselor	SEA	045.108	5
Counselor, Rehabilitation	SEC	045.108	5
Craneman	RCE	921.883	3
Crater and Packer	RES	920.884	3
Data Processing Worker	CER		4
Demonstrator	ESC	297.458	3
Dental Assistant	SAI	079.378	4
Dental Hygienist	SAI	078.368	4
Dentist	IRE	072.108	6
Dietitian	SIE	077.168	4
Director of Administrative Services	ESI	195.118	6
Director, Compensation and Benefits	ESI	166.168	4
Director, Dorm	SEC	045.108	5
Director, Guidance	ESI	045.118	5
Director, Industrial Relations	ESC	166.118	5
Director, Personnel	SIE	166.118	5
Director, Recreation	SCE	187.118	6
Director, Social Service	SEC	195.118	6
Director, Training	SEI	166.118	6
Dispatcher, Motor Vehicle	ESC	919.168	3
Dock Man	RSE	929.887	2
Draftsman	RIE	017.281	4
Draftsman, Architectural	RIA		4
Drama Coach	ASE	150.028	5
Dressmaker	RCS	785.361	3
Drill Press Operator	RIC	606.782	3
Dry Cleaner	RIC	362.782	3
Dry Room Man	REI	532.885	2
Duplicating Machine Operator	IER	207.782	3
Economist	ECI	050.088	6

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, con'd.

	HOC	DOT	GED
Electrician	RIS	820.281	4
Electroplater	RIE	500.380	4
Elevator Operator	RSC	388.868	2
Employee Benefits Approver	SEC	166.168	4
Employee Interviewer	ESC	166.268	5
Employment Representative	SEC	166.268	5
Engineer (n.e.c.)	IRC	007.081	5
Engineer, Aeronautical	IRE	002.081	6
Engineer, Aerospace Technician	IRE		4
Engineer, Chemical	IRE	008.081	6
Engineer, Civil	RIE	005.081	5
Engineer, Electrical	IRE	003.081	6
Engineer, Environmental Health	SEI	079.118	5
Engineer, Industrial	ESI	012.188	5
Engineer, Material	ICE	005.081	5
Engineer, Mechanical	RIE	007.081	6
Engineer, Metallurgical	IRE	011.081	6
Engineer, Railroad	RES	910.383	4
Engineer, Research	ICS	002.081	6
Engineer, Sales	EIR	010.151	5
Engineer, Sanitary	IEC	005.081	5
Engineer, Test--Aircraft	IRE	002.081	6
Engineer Aide	IRS	007.181	5
Entertainer (Dancer, Singer, etc.)	AES	159.048	5
Exhaust Operator	CRI	725.884	2
Extension Agent	SRI	096.128	5
Extrusion Machine Operator	IRE	557.782	3
Farmer	RIC	421.181	4
Filling Doffer	RCE	689.886	2
Filling Station Attendant	RIS	915.867	3
Finance Expert	CEI	020.188	5
Finisher-Wrapper	CRI	920.885	2
Finishing Machine Operator	RSI	674.782	3
Food and Drug Inspector	SIC	168.287	5
Food Service Worker	SRC	315.381	3
Foreign Language Interpreter	AIS	137.268	5
Foreign Service Officer	SEA	188.118	5
Foreman	REI	530.132	4
Foreman, Maintenance	EIS	891.138	4
Forester	RIS	040.081	5
Forging Press Oper.	RIE	611.782	3
Fork Lift Operator	RSE	922.883	2
Fountain Man	RSE	319.878	2
Funeral Director	SEC	187.168	5
Furnaceman	RCS	558.782	3
Gas-Main, Fitter Pipeman	RSE	862.381	4
Geographer	RIS	029.088	5
Geologist	IRA	024.081	6
Glazier	IRS	638.281	4
Government Official	ESC		5
Grinder (n.e.c.)	RIC	603.782	3
Guidance Counselor	SIR	045.108	5
Health & Welfare Coord.	SER	166.168	4
Heat Treater	RIS	504.782	3
Heater-Billets	RIC	613.782	3
High-speed Printer Operator	CIS	213.382	3

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, cont'd.

	HOC	DOT	GED
Historian	SEI	052.088	5
Home Economist	SEA	096.128	5
Home Service Representative	SEI	278.258	5
Horizontal Boring Mill Operator	IRC	606.280	4
Housekeeper, Executive	SCE	187.168	5
Houseparent	SRE	359.878	3
Housewife	SAE		
Humidifier Man	RIE	950.885	3
IBM Keypunch Operator	CRI	213.582	3
IBM Tabulation Operator	CRI	213.782	3
Induction Machine Operator	RIS	504.380	4
Industrial Truck Operator	RCS	922.883	2
Injection-Molding-Machine Operator	RIC	556.782	3
Inspector (n.e.c.)	IRC	504.387	3
Inspector, Public Administration	SIE	168.287	4
Insurance Underwriter	ECS	169.188	5
Interior Decorator	AIS	142.051	5
Interviewer	SEC	166.268	5
Jeweler	RIS	700.281	4
Job Analyst	SEC	166.088	5
Journalist (Reporter)	ASE	132.268	5
Kitchen Helper	RSC	318.887	1
Laboratory Assistant, Medical	ISC	078.381	4
Laborer, Guard, Janitor, Watchman (n.e.c.), Warehouseman	RSE		2
Lapping Machine Attendant	RIC	603.782	3
Lawyer, Judge, Attorney	EAS	110.118	6
Librarian	SAI	100.168	5
Lift Truck Operator	RCS	922.883	2
Lineman (Telephone & Telegraph)	RIE	822.381	4
Load Checker	RIC	952.387	4
Loom Changer	RIE	683.380	4
Loom Fixer	IRS	683.280	4
Machine Cleaner	RCI	699.887	2
Machine Operator (n.e.c.)	RIE		2
Machine Repairman	RIE	600.280	4
Machine Tender	RCI	680.885	2
Machinist	RIE	600.280	4
Maid	REC	323.887	2
Mail Carrier	RCS	233.388	3
Maintenance Man	RIE	899.281	4
Manager/Administrator (n.e.c.)	ESC		5
Manager, Advertising	AES	163.168	5
Manager, Branch	ESC	186.118	5
Manager, Credit	CES	168.168	5
Manager, Customer Services	ESC	912.138	4
Manager, Department Store	ESI	185.168	4
Manager, Farm	ECR	409.168	4
Manager, Food Service Supervisor	SEC	319.138	4
Manager, Insurance	ESC	186.118	5
Manager, Operations	SEC	183.118	5
Manager, Personnel	ESC	166.168	5
Manager, Production	ESC	183.118	5
Manager, Restaurant or Bar	ESC	187.168	5

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, cont'd.

	HOC	DOT	GED
Manager, Sales	ESC	163.118	5
Manager, Traffic	SEC	184.168	5
Manager, Wage and Salary Administrator	ESI	169.118	5
Manager, Warehouse	RES	184.168	5
Market Analyst	ECI	050.088	6
Material Handler	RCS	929.887	2
Mathematician (Statistician, Actuary)	IRA	020.088	6
Matron (Policewoman)	RES	358.878	2
Mechanic (n.e.c.)	RIE	600.280	4
Mechanic, Air Cond. Engr.	REI	637.281	4
Mechanic, Aircraft	RIE	621.281	4
Mechanic, Automobile	RIE	620.281	4
Mechanic, Instrument	RCI	710.281	4
Mechanic, Sheet Metal	RIE	804.281	4
Metal Saw Operator	RIE	667.782	3
Metallurgist, Assistant	IRE	011.281	4
Meter Reader	RCS	239.588	3
Military Officer	IRC		4
Milling Machine Operator	RIE	605.885	3
Millman, Master	RIC	550.885	2
Millwright	IRE	638.281	4
Model Maker	IRC	149.281	5
Molder (Foundry)	RSE	518.381	4
Musician	ASI	152.048	5
Natural Scientist (n.e.c.)	IRS	023.081	6
Nurse, Industrial	SIR	075.378	5
Nurse, Male Ward	SIE	075.378	4
Nurse, Licensed Practical	SAI	079.378	4
Nurse, Professional	SIA	075.378	5
Occupational Therapist	ESR	079.128	4
Oceanographer	IRS	024.081	6
Office Machine Operator	CIR	216.488	3
Office Machine Serviceman	CIS	633.281	4
Office Worker (n.e.c.)	CIE		4
Offset Press Man	RCE	651.782	4
Offset Press Operator	ISC	651.885	2
Operations-Research Analyst	EIC	020.088	6
Optometrist	ISR	079.108	5
Osteopath	ISR	071.108	6
Overhauler (Textile)	RIS	628.281	4
Painter (House, Bldg., Equip.)	RCI	840.781	3
Personnel Assistant	ESC	166.118	5
Personnel Recruiter	ESC	166.268	5
Pharmacist	IES	074.181	5
Philosopher	ASI	090.228	6
Photographer	AIR	143.062	4
Photolithographer	ICR	972.382	4
Photo Touch-up Operator	RCI	970.281	3
Physical Therapist	SIR	079.378	4
Physician	ISA	070.108	6
Physician (Internist)	IAS	070.108	6
Physician (Pathologist)	IAR	070.108	6
Physician (Surgeon)	IRA	070.108	6
Physicist	IAR	023.081	6
Physiologist	IES	041.081	6
Pipe Coverer	RIE	863.381	4
Pipe Fitter	IRC	862.381	4

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, cont'd.

	HOC	DOT	GED		HOC	DOT	GED
Placement Specialist	ESC	166.268	5	Repairman, Acct. Machine	ICE	633.281	4
Plant Engineer	EIR	007.187	5	Repairman, Equipment	ICR	620.281	4
Plasterer	RCS	842.781	3	Repairman, Installer	CSI	822.281	4
Plumber	RIE	862.381	4	Repairman, Instrument	IRC	710.281	4
Policeman (Patrolman)	RSI	375.268	3	Repairman, TV	ISC	720.281	4
Political Scientist	SAI	051.088	6	Research Analyst	ICS	011.281	4
Politician	SIC		5	Research Assistant	ICR	199.384	4
Powerhouse Repairman	RIS	631.281	4	Reservations Agent	CSR	912.368	4
Power Plant Operator	RIS	950.782	4	Roller	CIR	613.782	3
Principal	ESC	091.118	6	Roofer	RIE	866.381	3
Printer	RIC	651.782	3				
Product Finisher	RCS	920.887	2	Salesman (n.e.c.)	ESC		3
Production Expediter	SER	221.168	5	Salesman, Encyclopedia	ESI		4
Production Planner	ISC	012.188	5	Salesman, Life Insurance	ESI	250.258	4
Production Scheduler	SCI	221.168	5	Salesman, Public Utilities	SEC	257.358	4
Psychiatrist	ISA	070.108	6	Salesman, Route	ESR	292.358	3
Psychologist	ISA	045.088	6	Salesman, Security	ESA	251.258	6
Public Relations Man	AES	165.068	5	Salesman, Technical Products	EIS	284.258	5
Pulp and Paper Tester	IRC	539.384	3	Saleswoman, Retail	SEA	289.358	3
Punch Press Operator	IRE	615.782	3	Sawyer	RIE	690.782	3
Pusher Operator	RSI	504.782	2	Scarfer, Machine Tender	RCI	690.885	3
				School Superintendent	SIC	091.118	6
Quality Control Man	RIS	539.384	3	Secretary	CSE	201.368	4
				Secretary, Medical	CSA	201.368	4
Radial Drill Press Operator	RIE	606.380	4	Secretary, Personnel	CEI	201.368	4
Radio Operator	RIS	003.187	5	Serviceman, Gas Appliance	SRI	637.281	4
Radio/TV Announcer	EAR	159.148	5	Set-up Man	IRE	616.380	4
Railroad Brakeman	RES	910.884	3	Sewing Machine Operator	CSR	787.782	3
Railroad Conductor	RSE	198.168	4	Sheetmetal Man	IRS	804.281	4
Real Estate Agent	ECS	250.358	4	Shipper, Assistant	ECR	222.587	3
Receptionist	CSE	237.368	3	Skilled Tradesman (n.e.c.)	RIS		4

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, cont'd.

	HOC	DOT	GED
Slitter Machine Operator	IRC	699.782	3
Smash Hand (Textile)	RCI	683.885	3
Social Scientist (n.e.c.)	SIA		6
Social Worker	SIA	195.108	5
Sociologist	SIA	054.088	6
Solderer, Production Line	ICR	814.884	2
Sound Man	IRS	194.282	5
Spinner	RCS	682.885	2
Spiral Machine Operator	IRE	692.885	1
Spool Machine Operator	RIC	691.885	2
Steel Shearer Operator	RIC	615.782	3
Stenographer	CIE	202.388	3
Stitcher & Folder Tender	REI	589.885	2
Stock Chaser (Material Coordinator)	RSE	221.168	4
Stockman	RSC	929.887	2
Stonecutter	RIC	771.281	4
Stoveman	RIC	512.782	3
Straddle Truck Operator	RCE	922.883	2
Structural-Steel Worker	RIC	801.781	3
Supervisor, Master Dyer	SEI	582.138	5
Supervisor, Nursing	ESR	075.128	5
Supervisor, Ticket Sales	ECS	912.138	4
Supervisor of Training	SEI	166.228	5
Surveyor	CIS	018.188	5
Swine Herdsman	RES	413.884	4
Switchman	ICE	822.281	4
Taxicab Driver	RSE	913.463	3
Teacher, Art	ASI	149.028	5
Teacher, Business (Commercial)	CSE	091.228	5
Teacher, Dental Educator	IAR	072.108	6
Teacher, Elementary	SAI	092.228	5
Teacher, English	ASE	091.228	5
Teacher, Foreign Language	SAE	091.228	5
Teacher, History	SEI	091.228	5
Teacher, Home Economics	SAE	091.228	5
Teacher, Industrial Arts	RIS	091.228	5
Teacher, Literature	ASI	091.228	5
Teacher, Mathematics	ISR	091.228	5
Teacher, Music	ASI	152.028	5
Teacher, Natural Science	ISR	091.228	5
Teacher, Physical Education	SRE	153.228	5
Teacher, Social Science	SIC	091.228	5
Teacher, Speech	SAE	091.228	5
Teacher, Speech/Drama	ASE	150.028	5
Teacher, Voc. Agriculture	RSI	091.228	5
Teacher (n.e.c.)	SAE		5
Technician, Chemical Lab.	IRE	022.281	5
Technician, Dental	SIA	712.381	4
Technician, Electronic	IRE	729.381	4
Technician, Engineering (n.e.c.)	IRC	007.181	5
Technician, Industrial Engineer	RIE	012.288	5
Technician, Laboratory	IRC	029.381	4
Technician, Mechanical Engineer	RIE	007.181	5
Technician, Quality-Control	ICE	019.281	5
Technologist, Medical	ISR	078.381	5
Telephone Operator	CSE	235.862	3
Teller	CRS	211.468	3
Test and Troubleshooter	IRC	729.381	4

HOLLAND OCCUPATIONAL CLASSIFICATION AND CODE, cont'd.

	HOC	DOT	GED
Tester, Electronic Systems	IRC	729.381	4
Tester, TV Tubes	ICR	720.068	3
Ticket Agent	SCE	919.368	4
Time Study Analyst	CIS	012.188	5
Timekeeper	CRI	215.488	4
Tire Builder	ICR	750.884	3
Tool Crib Attendent	REI	223.387	3
Tool Designer	ICR	007.081	5
Tool & Die Maker	RIS	601.280	4
Toolmaker	IRC	601.280	4
Trackman	REI	869.887	2
Tractor Operator	RCE	929.883	3
Traffic Checker	CSR	919.368	3
Traveler Changer	RCE	682.887	2
Trimmer Operator	RIC	641.885	2
Truck Driver Trainer-Professional	CRE	905.883	3
Tube Machine Operator	IRS	690.782	3
Turret Lathe Operator	IRC	604.380	4
Typist, Layout	CIE	203.138	4
Typist, Statistical	CIE	203.588	3
Upholsterer	RIE	806.887	3
Utility Man	RIS	899.281	4
Veterinarian	IRS	073.108	5
Waitress (Waiter)	RSE	311.878	3
Ward Attendent	SRC	359.878	3
Warp Doffer	RCE	689.886	2
Water Pollution Control Specialist	CSI	168.287	4
Weaver	SRI	683.782	3
Welder	RIS	812.884	3
Winder Machine	RIC	640.782	3
Winder Man, Paper Machine	ICR	640.782	3
Wire Drawer	RIS	614.782	3
Writer	AIS	130.088	6
X-Ray Technician	IRS	078.368	4
Yarn Man	RES	681.887	2
YMCA, Physical Director	SIC	195.168	5
YMCA, Secretary	SIC	195.168	5
Zoologist	IRS	041.081	6

APPENDIX B

CENSUS AND HOLLAND OCCUPATIONAL CLASSIFICATIONS

PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS

Census Code		HOC
000	Accountants and auditors	CES
010	Actors and actresses	AIS
012	Airplane pilots and navigators	IRC
013	Architects	AIR
014	Artists and art teachers	AIR
015	Athletes (Physical Education)	SRE
020	Authors	AIS
021	Chemists	IRA
022	Chiropractors	ISR
023	Clergymen	SAI
	College presidents, professors, and instructors (n.e.c.)*	
030	College presidents and deans	SEI
	Professors and instructors,	
031	Agricultural sciences	RIE
032	Biological sciences	ISR
034	Chemistry	IRA
035	Economics	ECI
040	Engineering	IRC
041	Geology and geophysics	IRA
042	Mathematics	IRA
043	Medical sciences	ISA
045	Physics	IAR
050	Psychology	ISA
051	Statistics	IRA
052	Natural sciences (n.e.c.)	IRS
053	Social sciences (n.e.c.)	SIA
054	Nonscientific subjects	S__
060	Subject not specified	S__
070	Dancers and dancing teachers	AIS
071	Dentists	IRE
072	Designers	AIR
073	Dietitians and nutritionists	SIE
074	Draftsmen	RIE
075	Editors and reporters (journalist)	ASE
080	Engineers, aeronautical	IRE
081	Engineers, chemical	IRE
082	Engineers, civil	RIE
083	Engineers, electrical	IRE
084	Engineers, industrial	ESI
085	Engineers, mechanical	RIE
090	Engineers, metallurgical, and metallurgists	IRE
091	Engineers, mining	RIE
092	Engineers, sales	EIR
093	Engineers (n.e.c.)	IRC
101	Entertainers (n.e.c.)	AES
102	Farm and home management advisors	SRI
103	Foresters and conservationists	RIS
104	Funeral directors and embalmers	SEC

*n.e.c. means "not elsewhere classified."

PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS (cont'd.)

Census Code		HOC
105	Lawyers and judges	EAS
111	Librarians	SAI
120	Musicians and music teachers	ASI
	Natural scientists (n.e.c.)	
130	Agricultural scientists	RIE
131	Biological scientists	ISR
134	Geologists and geophysicists	IRA
135	Mathematicians	IRA
140	Physicists	IAR
145	Miscellaneous natural scientists	IRS
150	Nurses, professional	SIA
151	Nurses, student professional	SIA
152	Optometrists	ISR
153	Osteopaths	ISR
154	Personnel and labor relations workers	ESC
160	Pharmacists	IES
161	Photographers	AIR
162	Physicians and surgeons	ISA
163	Public relations men and publicity writers	AES
164	Radio operators	RIS
165	Recreation and group workers	SEA
170	Religious workers	SAI
171	Social and welfare workers, except group	SIA
	Social Scientists	
172	Economists	ECI
173	Psychologists	ISA
174	Statisticians and actuaries	IRA
175	Miscellaneous social scientists	SIA
180	Sports instructors and officials	SRE
181	Surveyors	CIS
182	Teachers, elementary schools	SAI
183	Teachers, secondary schools	SAI
184	Teachers (n.e.c.)	SAI
185	Technicians, medical and dental	ISR
190	Technicians, electrical and electronic	IRE
191	Technicians, other engineering and physical sciences	RIE
192	Technicians (n.e.c.)	I__
193	Therapists and healers (n.e.c.)	SAI
194	Veterinarians	IRS
195	Professional, technical, and kindred workers (n.e.c.)	IRE

FARMERS AND FARM MANAGERS

N	Farmers (owners and tenants)	RIC
222	Farm managers	RIC

MANAGERS, OFFICIALS, AND PROPRIETORS, EXCEPT FARM

250	Buyers and department heads, store	ECS

MANAGERS, OFFICIALS, AND PROPRIETORS, EXCEPT FARM

Census Code		HOC
251	Buyers and shippers, farm products	ECR
252	Conductors, railroad	RSE
253	Credit men	CES
254	Floor men and floor managers, store	ESI
260	Inspectors, public administration	C
262	Managers and superintendents, building	ESC
265	Officers, pilots, pursuers, and engineers, ship	REI
270	Officials and administrators (n.e.c.), public administration	ESC
275	Officials, lodge, society, union, etc.	SEI
280	Postmasters	ECS
285	Purchasing agents and buyers (n.e.c.)	CEI
R	Managers, officials, and proprietors (n.e.c.)	ESC

CLERICAL AND KINDRED WORKERS

Census Code		HOC
301	Agents (n.e.c.)	SEC
302	Attendants and assistants, library	SAI
303	Attendants, physician's and dentist's office	SAI
304	Baggagemen, transportation	RCS
305	Bank Tellers	CRS
310	Bookkeepers	CSI
312	Cashiers	CSI
313	Collectors, bill and account	RSC
314	Dispatchers and starters, vehicle	REC
315	Express messengers and railway mail clerks	CRE
320	File clerks	CES
321	Insurance adjusters, examiners, and investigators	CES
323	Mail carriers	CRE
324	Messengers and office boys	CRE
325	Office machine operators	CIR
333	Payroll and timekeeping clerks	CIE
340	Postal clerks	CES
341	Receptionists	CSE
Z	Secretaries	CSE
343	Shipping and receiving clerks	RIC
345	Stenographers	CES
350	Stock clerks and storekeepers	RES
351	Telegraph messengers	CRE
352	Telegraph operators	CSE
353	Telephone operators	CSI
354	Ticket, station, and express agents	CSR
360	Typists	CSR
Y	Clerical and kindred workers (n.e.c.)	CES

SALES WORKERS

Census Code		HOC
380	Advertising agents and salesmen	ESC
381	Auctioneers	ESC
382	Demonstrators	ESC
383	Hucksters and peddlers	ESC
385	Insurance agents, brokers, and underwriters	ESI
390	Newsboys	ESR
393	Real estate agents and brokers	ECI
395	Stock and bond salesman	ESA
S	Salesmen and sales clerks (n.e.c.)	ESC

CRAFTSMEN, FOREMEN, AND KINDRED WORKERS

Census Code		HOC
401	Bakers	RIS
402	Blacksmiths	RIC
403	Boilermakers	RIC
404	Bookbinders	RIE
405	Brickmasons, stonemasons, and tile setters	RCS
410	Cabinetmakers	RIC
Q	Carpenters	RIC
413	Cement and concrete finishers	RCS
414	Compositors and typesetters	RIC
415	Cranemen, derrickmen, and hoistmen	RCE
420	Decorators and window dressers	AIS
421	Electricians	IRS
423	Electrotypers and stereotypers	RIC
424	Engravers, except photoengravers	RIE
425	Excavating, grading, and road machinery operators	RSE
430	Foremen (n.e.c.)	REI
431	Forgemen and hammerman	RIE
432	Furriers	RES
434	Glaziers	IRS
435	Heat treaters, annealers, and temperers	RIS
444	Inspectors, scalers, and graders, log and lumber	RIC
450	Inspectors (n.e.c.)	IRC
451	Jewelers, watchmakers, goldsmiths, and silversmiths	RIS
452	Job setters, metal	IRE
453	Linemen and servicemen, telegraph, telephone, and power	ICR
454	Locomotive engineers	RES
460	Locomotive firemen	RES
461	Loom fixers	RIS
465	Machinists	RIE
470	Mechanics and repairmen, air conditioning, heating, and refrigeration	IRE
471	airplane	RIE
472	automobile	RIE
473	office machine	ICE

CRAFTMEN, FOREMEN, AND KINDRED WORKERS (cont'd)

Census Code		HOC
474	radio and television	ISC
475	railroad and car shop	RIE
480	(n.e.c.)	RIE
490	Millers, grain flour, feed, etc.	RIC
491	Millwrights	IRE
492	Molders, metal	RSE
493	Motion picture projectionists	RIE
494	Opticians, and lens grinders and polishers	RIC
495	Painters, construction and maintenance	RCI
501	Paperhangers	RCS
502	Pattern and model makers, except paper	IRC
503	Photoengravers and lithographers	ICR
504	Piano and organ tuners and repairmen	RIE
505	Plasterers	RCS
510	Plumbers and pipe fitters	RSE
512	Pressmen and plate printers, printing	RIC
513	Rollers and roll hands, metal	RIC
514	Roofers and slaters	RIE
515	Shoemakers and repairers, except factory	RIS
520	Stationary engineers	RIC
521	Stone cutters and stone carvers	RIC
523	Structural metal workers	RIC
524	Tailors and tailoresses	RCS
525	Tinsmiths, coppersmiths, and sheet metal workers	IRS
530	Toolmakers, and die makers and setters	IRC
535	Upholsterers	RIE
545	Craftsmen and kindred workers (n.e.c.)	RIS
555	Members of the armed forces	___

OPERATIVES AND KINDRED WORKERS

601	Apprentice auto mechanics	RIE
602	Apprentice bricklayers and masons	RIE
603	Apprentice carpenters	RIC
604	Apprentice electricians	RIS
605	Apprentice machinists and toolmakers	RIE
610	Apprentice mechanics, except auto	RIE
612	Apprentice plumbers and pipe fitters	IRC
613	Apprentices, building trades, (n.e.c.)	REI
614	Apprentices, metalworking trades, (n.e.c.)	IRS
615	Apprentices, printing trades	RIC
620	Apprentices, other specified trades	RIE

OPERATIVES AND KINDRED WORKERS (cont'd)

Census Code		HOC
621	Apprentices, trade not specified	RIS
630	Asbestos and insulation workers	RIE
631	Assemblers	RIC
632	Attendants, auto service and parking	RIS
634	Blasters and powdermen	RSE
635	Boatmen, canalmen, and lock keepers	RSE
640	Brakemen, railroad	RSE
641	Bus drivers	CRS
642	Chainmen, rodmen, and axmen surveying	RSE
643	Checkers, examiners, and inspectors, manufacturing	IRC
645	Conductors, bus and street railway	RSE
650	Deliverymen and routemen	RSE
651	Dressmakers and seamstresses, except factory	RCS
652	Dyers	SEI
653	Filers, grinders, and polishers, metal	RIC
654	Fruit, nut, and vegetable graders and packers, except factory	RES
670	Furnacemen, smeltermen, and pourers	RCS
671	Graders and sorters, manufacturing	RIC
672	Heaters, metal	RIS
673	Knitters, loopers, and toppers, textile	RCE
674	Laundry and dry cleaning operatives	RIC
675	Meat cutters, except slaughter and packing house	RSE
680	Milliners	RCS
685	Mine operatives and laborers, (n.e.c.)	RSE
690	Motormen, mine, factory, logging camp, etc.	RSE
691	Motormen, street, subway, and elevated railway	RSE
692	Oilers and greasers, except auto	RCI
693	Packers and wrappers (n.e.c.)	RIC
694	Painters, except construction and maintenance	RCI
695	Photographic process workers	RCI
701	Power station operators	RIC
703	Sailors and deck hands	RSE
704	Sawyers	RIE
705	Sewers and stitchers, manufacturing	REI
710	Spinners, textile	RCS
712	Stationary firemen	RSE
713	Switchmen, railroad	RSE
714	Taxicab drivers and chauffeurs	RSE
T	Truck and tractor drivers	CRE
720	Weavers, textile	SRI

OPERATIVES AND KINDRED WORKERS (cont'd)

Census Code		HOC
721	Welders and flame-cutters	RIS
W	Operatives and kindred workers, (n.e.c.)	RIE

PRIVATE HOUSEHOLD WORKERS

801	Baby sitters, private household	SRE
802	Housekeepers, private household	SRE
803	Laundresses, private household	REC
P	Private household workers (n.e.c.)	REC

SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD

810	Attendants, hospital and other institutions	SRC
812	Attendants, professional and personal service (n.e.c.)	SRC
813	Attendants, recreation, and amusement	SRC
814	Barbers	RSE
815	Bartenders	RSE
820	Bootblacks	RSE
821	Boarding and lodging housekeepers	SRE
823	Chambermaids and maids, except private household	REC
824	Charwomen and cleaners	REC
825	Cooks, except private household	RIS
830	Counter and fountain workers	SRC
831	Elevator operators	RSE
832	Housekeepers and Stewards, except private household	ESC
834	Janitors and sextons	RSE
835	Kitchen workers (n.e.c.),except private household	REC
840	Midwives	SIA
841	Porters	RSE
842	Practical nurses	SIA
843	Hairdressers and cosmetologists	SAC

Protective service workers

850	Firemen, fire protection	RSE
851	Guards, watchmen, doorkeepers	RSE
852	Marshals and constables	RSI
853	Policemen and detectives	RSI
854	Sheriffs and bailiffs	RSI
860	Watchmen (crossing) and bridge tenders	RSE
874	Ushers, recreation and amusement	RSE
875	Waiters and waitresses	RSE
890	Service workers, except private household (n.e.c.)	RSE

FARM LABORERS AND FOREMEN

Census Code		HOC
901	Farm foremen	REI
U	Farm laborers, wage workers	RSE
V	Farm laborers, unpaid family workers	RSE
905	Farm service laborers, self-employed	RSE

LABORERS, EXCEPT FARM AND MINE

960	Carpenters' helpers, except logging and mining	RSE
962	Fishermen and oystermen	RSE
963	Garage laborers, and car washers and greasers	RSE
964	Gardeners, except farm, and groundskeepers	RSE
965	Longshoremen and stevedores	RSE
970	Lumbermen, raftsmen, and woodchoppers	RSE
971	Teamsters	RSE
972	Truck drivers' helpers	RSE
973	Warehousemen (n.e.c.)	RSE
X	Laborers (n.e.c.)	RSE

995	OCCUPATION NOT REPORTED

[1]Mine laborers are included in the major group "operatives and kindred workers."

APPENDIX C

The following table presents the classification codes for only those occupations which were common to all three sources of data (Purdue factors, direct assessment of people with the VPI, or indirect assessment with an alternate form of the VPI applied to Strong data). Note also that we have compared occupations with similar titles and functions as well as occupations with identical titles.

A review of this table will usually reveal similar classification codes for the same occupation, although three divergent techniques for the determination of occupational codes have been applied to a variety of divergent, accidental, or convenient samples of both college students and employed adults. No statistical tests were applied to these data because tests appear sensible only for the few identical occupational titles.

Comparability of Classification Codes Obtained by Different Methods and Samples

REALISTIC OCCUPATIONS

VPI Data		Purdue Data		Strong Data	
Farmer	(149) RIE	Farm Laborer	RSE	Farmer	(235) RCS
"	(190) RIE			"	(77) RCS
				"	(241) RIC
Electrical Worker	(604) RIE	Electrician	RIS	Electrician	(120) RIS
		"	RIE		
		"	RIC		
Metal/ Machine Worker	(102) RIE	Machinist	RIE	Machinist Journeyman	(118) RIS
		"	IRE		

Note: All VPI codes were obtained from student aspirants unless designated with an "E" for "employee sample." Numbers in parentheses equal sample size. Purdue factors are based on a single job analysis. Two letters underlined indicates ties.

INTELLECTUAL OCCUPATIONS

VPI Data	Purdue Data	Strong Data
Chemist (87) IRA	Chemistry Inst. Tech. IER	Chemist (297) IRC " (250) IAR
Medical Technologist (53) IRS Medical Technol. (9) IRS	Head Medical Technol. IES	Medical Technol. (252) ISR
Engineering Scientist (44) IRA	Design-Div. Engineer IEC Research Engineer ICS Design Engineer ICE	Engineers (386) IRC Engineers (1028) IRS Engineers (93) IRA Engineers (513) IRC
E Engineer/ Tech. (58) IRA Engineer (246) RIE		

ARTISTIC OCCUPATIONS

VPI Data	Purdue Data	Strong Data
Music Teacher (63) ASI	Music Teacher SCE	Music Teacher (493) ASI " " (150) ASI

SOCIAL OCCUPATIONS

VPI Data	Purdue Data	Strong Data
E. Counselor (58) SEI " (36) SEA	Voc. Rehab. Counselor SEC " SEC	Guidance Counselor (44) SIC Rehab. Counselor (272) SIC Guidance Counselor (275) SIC School Counselor (203) SIR
Social Worker (19) SIE Social Service Worker (76) SAE	Case Worker SEC Case Worker SEC Case Worker SEC Case Worker Asst. SEC	County Welfare Worker (55) SCI Social Worker (400) SIA Social Worker (54) SIA
E. Clergyman (32) SAI " (77) SAI " (47) SAE	Chaplain SEC	Minister (498) SIA " (451) SIA " (60) CSE " (151) SAI " (293) SIA " (97) SAI "Unitarian (113) SAI "Unitarian (69) AIS Minister (250) SAI
Industrial Psychologist (17) SEA	Indust. Psych. SEI	Psychologist Indust. (108) ISA
Secretary (1024) SCA " (267) SCA	Secretary CRE " CRE " (N=3) CIS " (N=1) CIE " (N=1) CIR " (N=6) CSE " (N=8) CSE	Office Worker (326) CIE YMCA Sec'y (113) SCI " " (184) SIAC

ENTERPRISING OCCUPATIONS

VPI Data		Purdue Data		Strong Data	
Buyer	(16) ECR	Purchasing Agent	ECS	Buyer	(158) ECS
				Buyer	(33) ECI
				Buyer	(41) EIC
				Buyer	(176) ESC
				Purchasing Agent	(164) RIE
				Purchasing Agent	(219) CIE
Manager/Admin.	(360) ECS	Admin. Assist.	ECS	Sales Mgr.	(228) EIC
" "	(1178) ECS			" "	(199) ESI
		Manager	EIS	Dept. Store Manager	(254) ESI
		" (N=3)	ESC		
		" (N=11)	ESC		
		" (N=3)	ESI		

CONVENTIONAL OCCUPATIONS

VPI Data		Purdue Data		Strong Data	
Accountant	(605) CES	Jr. Accountant	CRI	Accountant	(126) ICS
"	(279) CER	Accounting Asst.	CRI	CPA	(304) ICS
				"	(612) ICR
		Bookkeeper	CIS	"	(354) ICS
				Accountant	(345) CIS